

**METHOD FOR FABRICATING
MOS DEVICE WITH HALO IMPLANTED REGION**

Abstract of the Disclosure

A halo implant (42, 44) for an MOS transistor (10) is formed in a semiconductor substrate (12) at a shallow implant angle, relative to normal to the substrate surface (29). A polysilicon gate structure (32, 33) is formed over
5 a gate oxide (28) and then a hard mask (70), such as a TEOS-generated layer of silicon oxide, is deposited on an upper surface (68) of the gate. The mask is etched with a blanket anisotropic etch to form a cap-shaped mask (72). The shape of the cap causes the dopant for the halo implant to
10 penetrate to a depth which follows the contour of the cap. Thus, halo implants may be formed which extend under the gate structure without the need for large angle implants and resultant shadowing problems caused by adjacent devices.